PROCEDURES FOR INSTALLING BUSHINGS IN FRICTION ROLL AND GEAR REDUCTION DRIVE SHAFTS

1. GENERAL

1.01 This section covers procedures for installing bushings in friction roll drive shafts and gear reduction drive shafts (where mounting conditions of the drive permit) to overcome excessive play of the connecting shafts where this movement is due to a worn shaft bearing hole in the friction roll or gear reduction drive shaft at the coupling.

1.02 This section is reissued to incorporate material from the addendum in its proper location. In this process marginal arrows have been omitted.

1.03 These procedures do not apply where the friction roll shaft or the shaft of the gear reduction drive is equipped with a removable extension shaft. In these cases when the bearing hole in an extension shaft is worn, it will be more economical to replace the part as outlined in the section covering piece part data and replacement procedures for friction roll drives or for gear reduction drives.

1.04 After performing the operations covered herein, the part or parts replaced or repaired shall meet the readjust requirements involved as specified in the BSP section covering this apparatus. Other parts whose adjustment may have been disturbed by the replacing or repairing operations shall be checked to the test requirements and an overall operation check shall be made of the apparatus before restoring the circuit to service. Lubricate the coupling parts affected as specified in the BSP section covering this apparatus.

2. TOOLS AND MATERIALS

CODE NO.	DESCRIPTION
TOOLS	
344	Offset Screwdriver
†499A	Drill Jig
†500A	19/64" Drill (Shank marked "Drill")
†501A	5/16" Drill (Shank marked "Redrill")
†502A	.252" Drill (Shank unmarked)
—	Ratchet Brace
†—	6" Smooth Flat File
—	6-1/2" P-Long Nose Pliers
—	4" Regular Screwdriver
†(2 required)	KS-6367 7/16" and 5/8" Hex. Flat Open Double End Wrench
MATERIALS	
†—	P-236155 Brush (Cam Cleaning)
—	KS-7860 Petroleum Spirits
—	D-98063 Cloth or KS-2423 Cloth
—	KS-2245 Oil
—	Petrolatum
—	P-173868 Bushing (27/64" long) (For drives associated with 2 type shaft couplings)
—	P-173869 Bushing (31/64" long) (For drives associated with 10 type couplings)
—	P-290294 Washer .005" Thick
—	P-290295 Washer .010" Thick

† *Note:* These tools are part of the No. 1002A Tool Kit.

3. PROCEDURES FOR INSERTING BUSHINGS

3.01 ***Preparation of Drive:*** Ascertain whether it is necessary to make any of the associated circuits busy. Make the circuits so affected busy in the approved manner. Stop the drive.

3.02 Remove the shaft guard associated with the shaft to be repaired. To do this, remove the shaft guard mounting screws with the

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No. 344 screwdriver or the 4″ regular screwdriver. If the guard is sealed, insert the screwdriver under the edge of the guard and pry it off the cover. Remove the drive shaft coupling as outlined in the section covering piece part data and replacement procedures for horizontal connecting shafts. Where the shaft has previously been equipped with a bushing, proceed as outlined in 3.06 to remove the worn bushing before proceeding as outlined in 3.03 to 3.05 inclusive.

3.03 ***Assembling No. 499A Drill Jig on Friction Roll Shaft:*** Place the sleeve in the opening in the top of the shell and turn the sleeve in until it just comes through the opening in the upper edge of the rectangular hole. Rotate the motor coupling by hand to the position where the shell can most easily be placed on the flat portion of the shaft. With the steps of the shell held toward the cover, place the shell on the flat portion of the shaft as shown in Fig. 1. Turn the sleeve in so that the shell is held loosely on the shaft but will not rotate on the shaft. Insert the plunger in the opening in the sleeve and turn the plunger in by hand until it extends just through the shaft. Back off the plunger one full turn. This is done to prevent the sleeve from being loosened when the plunger is removed. Tighten the sleeve securely in place with the KS-6367 wrench seeing that the shell is approximately parallel to the end of the shaft. Remove the plunger.

3.04 ***Drilling Shaft Bearing Hole:*** Place the No. 500A drill in the brace. Using the sleeve as a guide, drill the bearing hole. Remove the drill and clean the inner threads of the sleeve by drawing the P-236155 cam cleaning brush through the hole in the shaft with the long nose pliers. Place the No. 501A drill in the brace. Drill and clean the shaft following the procedures outlined above.

3.05 ***Installation of Bushing in the Shaft Bearing Hole:*** Mount the 1/2″ collar on the plunger. Place a slight amount of petrolatum on the first step of the plunger and slip the specified bushing over this step. The petrolatum is used to hold the bushing in place. Insert the plunger in the sleeve and force the bushing in place by turning the plunger in with the KS-6367 wrench. The collar will limit the depth to which the bushing can be forced. Remove the plunger. Place the No. 502A drill in the brace, ream and clean the bushing as outlined in 3.04. Loosen the sleeve with the KS-6367 wrench and remove the shell from the shaft. If the bushing extends beyond the flat portion of the shaft, file it level with the smooth flat file.

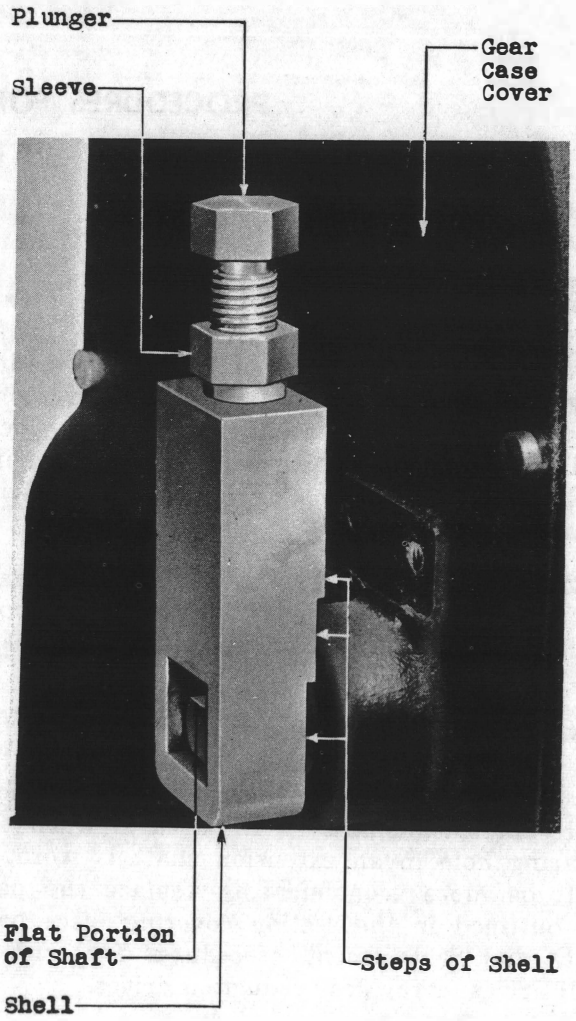

Fig. 1 – Illustrating Mounting of No. 499A Drill Jig On Friction Roll Shaft

3.06 ***Removing Bushing From Connecting Shaft Bearing Hole:*** If a bushing is worn, proceed as outlined in 3.03 with the exception that the plunger is not removed. With the shell satisfactorily secured, turn the plunger in with the KS-6367 wrench until the bushing is forced from the bearing hole. Install and drill a new bushing as outlined in 3.04 and 3.05.

3.07 ***Cleaning Parts in Preparation for Storing Them:*** Clean the outside threads of the shell and plunger and drills with a D-98063 cloth moistened with pertoleum spirits. Allow the petroleum spirits to dry and then apply a light film of KS-2245 oil to the parts before storing them for future use to prevent rust.

3.08 ***Reassembling Apparatus:*** Insert a new coupling pin through the bushing in the extension shaft and mount the coupling shoes over the coupling pin. Then while holding the pin and shoes securely in place with the fingers check whether there is excessive movement between the shoes and the extension shaft. If there is, remove the shoes and place as many P-290294 (.005" thick) or P-290295 (.010" thick) washers over the ends of the pin as required. Remount the shoes and recheck the movement between the shaft and shoes. If it is satisfactory, connect the horizontal connecting shaft and remount the shaft guard, resealing it if necessary as outlined in the section covering piece part data and replacement procedures for connecting shafts. Then start the drive and return the circuits previously made busy to service.